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ABSTRACT

The purpose of this project was to test the effectiveness of i.t.a. in teaching reading to first grade students in the Portland Public Schools. Some of the elements of the experimental design included the following: one experimental--i.t.a.--and one control--traditional orthography (TO)--class was formed in each of ten schools; teachers and students were randomly assigned to i.t.a. and TO classes; three "waves" (1967-68, 1968-69, 1969-70) of first grade classes were evaluated through the third grade; the TO classes used regular Portland Public School reading materials; and reading achievement, spelling achievement, composition, and handwriting were analyzed for significant differences. The results indicated that no significant differences were found between TO and i.t.a. groups in both reading and mathematics; the i.t.a. group used more words and misspelled fewer words; the i.t.a. students used significantly more phrase modifiers and words in their compositions; there were no significant differences in handwriting between the two groups; and i.t.a. does not appear to detract from scholastic skills. (WR)

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A Six-Year Experiment in the Use of
the Initial Teaching Alphabet (i.t.a.)
in the Teaching of Reading

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PORTLAND PUBLIC SCHOOLS

i.t.a. EXPERIMENT

Background of the Project

The interest in an experimental program to test the effectiveness of i.t.a. in the teaching of reading grew out of the use of i.t.a. by a single class in Grout School in 1965-66. The principal and the i.t.a. teacher of the school contacted Dr. George Ingebo, then director of research, and Mr. Leslie Lee, then area director of elementary Area V, to explore the possibility of a large scale experiment to test the effectiveness of the method.

Dr. Ingebo proceeded to develop a research design that would involve a number of schools in a longitudinal study extending over a six-year period. This design was checked by the assistant superintendent and director of curriculum, the supervisors of language arts, and the remedial reading supervisor.

After receiving approval of the design, Dr. Ingebo and Mr. Lee approached the elementary school principals of Area V to sound out their interest in the experiment. Ten principals volunteered and from that point forward assumed a key role in the management and direction of the project.

The Experimental Design

Elements of the experimental design were as follows:

1. One experimental (i.t.a.) and one control (T.O.) class were formed in each of the ten schools.
2. Students in each school were randomly assigned to an i.t.a. or T.O. class. See Appendix A.
3. Teachers were also randomly assigned to either an i.t.a. or T.O. class. See Appendix A.

4. Only schools with three sections per grade were selected in order to provide an overflow group so that shifts to balance class loads could be made without shifting T.O. children into an i.t.a. class and vice-versa.
5. Schools in the experiment represented a normal distribution from high to low socio-economic status.
6. One entire set of ten i.t.a. and ten T.O. first grade classes field tested the i.t.a. and T.O. programs using essentially the same training, supervision, tests, materials, and methods that were to be used in the experiment itself. This took place in 1966-67.
7. The design called for three "waves" (1967-68, 1968-69, 1969-70) of first grade classes (ten i.t.a. and ten T.O.). The progress of these classes was evaluated through the third grade. The 30 i.t.a. classes constituted the i.t.a. or experimental group. The 30 T.O. classes constituted the T.O. or control group.
8. The first year treatment involved use of the basic approach developed by Dr. A. J. Mazurkiewicz, author of the Early to Read materials. The T.O. classes used regular Portland Public School reading program materials with supplementary reading materials being added to make the total program of materials equivalent to those used with the i.t.a. classes. See Appendices B, C, and D.
9. The second year treatment of the i.t.a. classes continued with Early to Read materials until transition to T.O. was accomplished, at which time students were placed in materials and instruction

comparable to those for the T.O. classes. The T.O. classes in their second year continued in the regular Portland Public Schools reading program. See Appendices B, C, D, and E.

10. Measurement was carried out as follows: Grade 2 - Form 12A, Cooperative Primary Reading Test; Grade 3 - McMenemy Primary Reading Test, and Portland Public Schools' Primary Mathematics Test. These third grade reading and mathematics tests were constructed in the Portland District using appropriate item analysis techniques and were standardized in the Portland District. Counts of misspelled words were made to evaluate third grade spelling. Also used in the third grade were the Zaner-Bloser scale for evaluating third grade handwriting and the Portland District procedure for evaluating compositions. See Appendices F, G, H, and I.

11. The design for data analysis:

- (a) Means of achievement tests for the i.t.a. group and the T.O. group were compared with significance of difference to be tested by the t test. (Note: Due to the development of multivariate analysis capabilities during the period of the experiment, this type of analysis was applied to the data rather than the t tests originally provided for.)
- (b) Spelling errors were recorded and analyzed according to types of errors anticipated as a result of an analysis of the i.t.a. alphabet. The number of errors of the types anticipated were compared between the i.t.a. and T.O. groups as were total errors. Total error differences were tested for significance by the chi square method.

- (c) All words used in composition were recorded and the frequency of use of each word was counted for the i.t.a and T.O. groups, then listed alphabetically and in rank order for analysis.
- (d) Total words used and total numbers of different words used in composition were subjected to chi square tests to determine significance of differences between the i.t.a. and T.O. groups.
- (e) The compositions were evaluated for their semantic quality by counting the noun, phrase, and clause modifiers, and by counting the total number of words in a composition. The total count provided a measure of fluency. Chi square tests were used to determine the significance of differences between the i.t.a. and T.O. groups.
- (f) Samples of third grade handwriting were obtained from each student scheduled on four occasions. These were rated on a scale ranging from 0 to 7. The difference between the means for the i.t.a. and T.O. groups was subjected to a t test to determine the significance of the difference.

General Quality Safeguards

A great deal of care was taken in the design and conduct of the experiment to insure that the resources available to the i.t.a. and T.O. groups were comparable and that the conditions under which instruction was carried out were the same. Among the steps taken to insure this were the following:

1. The amount and motivational qualities of reading materials were made as equal as possible for the two groups.

2. The amount and time devoted to instruction, based upon the recommendations in the Portland Public Schools reading guide, were equated for the two groups.
3. If visitors requested to see an i.t.a. class, they were also required to visit the corresponding T.O. class.
4. The training and consultant help given teachers in i.t.a. were matched by giving a comparable amount to teachers using traditional methods.
5. Equal time was given to explaining the reading program and the reporting of pupil progress to parents of children in the i.t.a. and T.O. classes.
6. Room facilities and equipment were made as comparable as possible between the two groups.
7. Children found already able to read on entry into first grade were allocated equally between the i.t.a. and T.O. classes.

General Conduct of the Experiment

One of the strongest features of the experiment was the formulation of a steering committee comprised of the principals of the ten schools in which the projects were carried out. This insured continuing interest of the principals in the experiment and the carrying out of the numerous administrative tasks required to insure comparability of the experimental and control groups, and the conduct of the experiment according to the specifications of the research design.

Another strong feature was the continuing interest and support of key District personnel, such as the assistant superintendent and director of curriculum, the language arts consultants, the remedial reading supervisor, and the area elementary director. All of these persons followed the progress

of the experiment with interest and contributed their knowledge and encouragement during all phases of the study.

The presence of a full-time reading consultant trained both in i.t.a and T.O., who gave equal time in assisting teachers in both the i.t.a and T.O. groups, was also an important element in insuring that the i.t.a. and T.O. groups operated their respective programs according to the design plan. The consultant also assured that the testing done by teachers in connection with the program was carried out correctly and in a standardized way.

Finally, an element of quality control of real significance was the supervision of the collection, analysis, and storage of data connected with the project by Mrs. Mar Jean Stave, who has stayed with the experiment throughout the entire seven years. She supervised the collection of all data, the scoring and editing of composition tests, the keeping of records on random selection of students, the records on transition from i.t.a. to T.O., the records of school personnel changes, progress logs on the study itself, and test records.

The analyses of variance were carried out at the University of California at Berkeley under the supervision of Dr. M.I. Charles E. Woodson. Dr. Chad Karr and Dr. Victor Doherty assisted in the preparation of the final report.

RESULTS

Reading

The first reading test (Cooperative Primary Reading Test) was given in the spring of the second grade for each of the three waves of students. The maximum raw score possible was 50. The i.t.a. students had a mean of 36.04 and the T.O. students a mean of 35.87. The slight difference in favor of the i.t.a. group did not approach statistical significance ($p < .77$). See Table 1.

The second reading test (primary level of McMenemy Measure of Reading Ability) was given in the spring of the third grade for each of the three waves of students. The maximum raw score possible was 46. The i.t.a. students had a mean of 26.89 and the T.O. students a mean of 27.19. The slight difference in favor of the T.O. group also did not approach statistical significance ($p < .51$). See Table 1. Table 2 gives the results by wave.

Significant differences among schools in silent reading comprehension were found in both the second grade and third grade ($p < .0001$). Table 3 lists the means of third grade reading performance for the i.t.a. and T.O. groups in the ten schools. The rank order of the combined performance of the two groups was correlated with a socio-economic ranking obtained by combining rankings made independently by two staff members. The resulting rank order correlation was .77. Corrected for attenuation attributable to unreliability in the test and between the raters, the correlation between third grade reading performance and judged socio-economic level of the schools becomes .95.

Mathematics

The Portland Math Test was also given in the spring of the third grade for each of the three waves of students. Scores on the three different skills were obtained: computation, concepts, and problem solving. A total math score was also obtained. As with the third grade reading test, for

two out of the three skills the slight differences favored the T.O. group, as did the total score. Performance on the third skill (problem solving) was practically identical. Again, the differences did not approach statistical significance ($p < .32, .39$). See Table 1. Table 2 gives the results by wave.

Combined Reading and Mathematics Performance

An overall multivariate test was made of the difference between the i.t.a. and T.O. groups for performance on the two reading tests and the three math subtests. Again, the results did not approach statistical significance ($p < .45$). See Table 1.

Third Grade Spelling

Because i.t.a. uses a phonetic spelling of words that children read, it was expected that the i.t.a. group would have problems with conventional spellings after its transition to T.O. Transition to T.O. was completed by the end of the second grade by approximately 95% of the students. An analysis was done to see if i.t.a.'s unique alphabet carried over into the writing of third grade compositions. Twenty likely types of transition errors were tabulated for the i.t.a. and T.O. groups. There were only three types of spelling errors in which the differences were statistically significant. One type of error (ow) occurred less frequently in the i.t.a. group. Three types of errors (ai, igh, wh) occurred more frequently in the i.t.a. group. See Appendix G for the data analysis.

Another type of analysis was used to determine if the number of misspelled words per student was greater for the i.t.a. group or for the T.O. group. All of the different words used in the compositions were listed with the number of times each word appeared. Each unique misspelling of a word was listed with the frequency of that particular form of misspelling. The

Table 1

Means for Two Reading Tests and One Math Test
for i.t.a. and T.O. Groups

Grade	Subject	Test	Skill	Maximum Possible	Mean		Difference	p <
					i.t.a. N=437	T.O. N=424		
2	Reading	Co-op Reading	Reading	50	36.04	35.87	0.17	.77
3	Reading	McMenemy	Reading	46	26.89	27.19	-0.30	.51
3	Math	Portland Math	Computation	36	19.30	19.78	-0.48	.32
			Concepts	16	7.68	7.95	-0.27	
			Problem Solving	15	8.07	8.06	0.01	
			Total Math Score	67	35.32	35.85	-0.53	.39
Statistical significance of mean differences for all five measures								.45

Table 2

Means and Significance of Differences
for Three Waves of I.T.A. and T.O. Students
on Standardized Reading and Mathematics Tests

Wave	2nd Grade Coop Reading	Significance of Difference	3rd Grade McMenemy Reading	Significance of Difference	Math Computation	Math Concepts	Math Problem Solving	Math Total	Significance of Difference
1	I.T.A. 37.1	p < .50	27.9	p < .77	20.1	7.5	7.9	35.4	p < .04
	T.O. 36.4		27.9		21.0	8.3	8.6	38.0	
2	I.T.A. 36.3	p < .73	26.4	p < .40	19.1	8.0	8.3	35.7	p < .54
	T.O. 36.6		27.1		20.0	8.0	8.2	36.0	
3	I.T.A. 34.4	p < .97	26.3	p < .97	18.9	7.5	7.9	34.9	p < .19
	T.O. 34.8		26.7		18.5	7.4	7.4	33.6	

Table 3

Means of Third Grade Reading Performance
for i.t.a. and T.O. Groups for Ten Schools

<u>School</u>	<u>i.t.a.</u>		<u>T.O.</u>	
	<u>N</u>	<u>Mean</u>	<u>N</u>	<u>Mean</u>
1	40	25.22	41	26.63
2	54	26.78	48	27.52
3	52	30.83	52	32.10
4	34	22.53	31	25.77
5	50	29.44	50	28.84
6	41	30.76	41	30.68
7	52	27.65	51	28.14
8	40	25.92	47	24.36
9	38	26.24	35	24.03
10	36	23.53	28	24.86
10 Schools	437	26.89	424	27.19

F ratio for differences among schools = 12.503 for 9 and
841 degrees of freedom. $p < .0001$

F ratio for school X method interaction = .910 for 9 and
841 degrees of freedom. $p < .52$

i.t.a. group with an N of 402 used a total of 31,208 words, and the T.O. group with an N of 392 used 27,911. The i.t.a. group used significantly more words per student, and misspelled significantly fewer words per student. However, the i.t.a. group did not use significantly more words which were different. See Table 4.

The conventional chi square test used to determine differences in use of different words may not be totally accurate because of the decreasing likelihood that cases beyond 392 would contribute new words in the ratio suggested by the difference between 392 and 402, the respective N's of the control and experimental groups. However, it is extremely unlikely that correcting for this difference in N would appreciably affect the outcome.

Third Grade Compositions

During the spring of their third year, each wave of i.t.a. and T.O. students wrote a composition of one page or less on a topic of the student's own choice. See Appendix H. These compositions were evaluated for their semantic quality by an objective method which involved two types of word counts. The primary evaluation was made by counting noun modifiers, phrase modifiers, and clause modifiers. It was believed that this procedure would provide a measure of the richness of ideas in basic sentence patterns. The secondary evaluation was obtained by counting the number of words in the composition. It was believed that the number of words used would provide an acceptable though imperfect measure of fluency.

Taking into account the total number of all kinds of words used, it is apparent from Table 5 that there was no difference in i.t.a. and T.O. in the proportion of word modifiers to all other words used, or in the proportion of clause modifiers. The i.t.a. students did use proportionately more phrase modifiers ($p < .05$), and the total number of modifiers they used approached statistical significance ($p < .10$).

Table 4

Number of Words Used, Number Spelled Correctly, and
Number of Different Words Used by i.t.a.
and T.O. Groups

	i.t.a.	T.O.	χ^2	$P <$
Number of Students	402	392		
Total Number of Words	31,208	27,911	110.70	.001
Correctly Spelled	{ 25,653	{ 21,042	411.35	.001
Incorrectly Spelled	{ 5,555	{ 6,869		
Correctly Spelled, Capitalization Ignored	{ 27,097	{ 22,308	511.09	.001
Incorrectly Spelled, Capitalization Ignored	{ 4,111	{ 5,603		
Total Number of Different Words	2,735	2,641	.14	.50
Correctly Spelled	{ 2,212	{ 2,189	3.65	.10
Incorrectly Spelled	{ 523	{ 452		
Correctly Spelled-Capitalization Ignored	{ 2,295	{ 2,266	3.72	.10
Incorrectly Spelled-Capitalization Ignored	{ 440	{ 375		

For those interested in differences in modifier count among schools or among the three waves of i.t.a. and T.O. groups, sub-totals by school and wave are given in Table 15 in Appendix I. Also included in this Appendix are the values used in the chi square analyses. See Table 16.

Expected values for the chi square analyses were based on the ratio of total words used by i.t.a. and T.O. students to the grade total of words used by both groups of students combined. Table 16 in Appendix I provides detailed information on how the expected values were obtained.

Third Grade Handwriting

During the spring of their third year, four samples of handwriting were obtained from the i.t.a. and T.O. students. These samples were rated as described in Appendix J. The ratings were summed for each student and then for each school. An overall or grand mean was computed for the i.t.a. students and for the T.O. students. These means were 2.22 for i.t.a. and 2.21 for T.O. See Table 6. On the Zaner-Bloser scale for judging the quality of handwriting, these values fall closer to poor than fair. Both groups were equally low on the scale ($t = .11$, $p < .90$).

Table 5

Chi Square Analyses of Modifiers
Used by i.t.a. and T.O. Groups
Based on Total Words Used

	N	Total Words Used	Word Modifiers	Phrase Modifiers	Clause Modifiers	Total Modifiers
i.t.a.	397	31,208	2,048	2,185	505	4,738
T.O.	378	27,911	1,828	1,826	433	4,087
			$\chi^2 = .004$ $p < .95$	$\chi^2 = 4.62$ $p < .05$	$\chi^2 = .43$ $p < .60$	$\chi^2 = 2.84$ $p < .10$

Table 6

Grade Three Handwriting Comparison
for i.t.a. and T.O. Groups

	N	Mean	Difference	t	p
i.t.a.	406	2.22	.01	.11	.90
T.O.	395	2.21			

DISCUSSION AND CONCLUSIONS

Reading

The greatest single source of systematic variance in reading performance in this project is attributable to differences in schools. These ten schools represent a wide range of white socio-economic levels.

The non-significant interaction between school and method of reading instruction indicates that neither method favors one end of the socio-economic continuum over the other. In summary, the results of this study indicate that i.t.a. and T.O. are equally effective in teaching silent reading comprehension.

It should be noted that the morale and enthusiasm were high for both the i.t.a. and T.O. teachers. Enthusiasm among the i.t.a. teachers was especially high and persisted throughout the experiment. This appears to strengthen the conclusion that neither method offers appreciable advantages in learning to read for comprehension.

Mathematics

The fact that no significant differences were found between T.O. and i.t.a. groups in both reading and mathematics provides at least prima facie evidence that time for reading was not taken by either group at the expense of mathematics.

The problem solving section of the math test required reading comprehension. The similarity of the math sub-test means for problem solving (Table 1) provides additional evidence that i.t.a. and T.O. were equally effective.

Spelling

Of all the scholastic skills evaluated in this project, the most encouraging result from the use of i.t.a. was in spelling. Not only did the i.t.a. group use more words, they actually misspelled fewer of those words. The differences may not seem striking, but they are highly statistically signifi-

cant. In spite of having to make the transition from words spelled in i.t.a. characters (see chart in Appendix B) to conventional spelling, the i.t.a. students had relatively fewer problems with traditional spelling.

Hypotheses that might bear testing concerning the advantage in spelling shown by i.t.a. students include:

1. The necessity to learn additional alphabet characters produces greater ability to discriminate between letters in learning to spell.
2. The process involved in learning a second spelling for the same word makes the student more aware of the proper T.O. spelling.
3. More attention is given to conventional spelling by i.t.a. teachers, possibly as part of the transition to T.O.

Compositions

The third grade compositions were used to compare differences in encoding between i.t.a. and T.O. students. The measures of semantic quality (word, phrase, and clause modifiers plus number of words per composition) obviously are not the basis on which evaluation of writing is usually based. However, it would be difficult to come up with more objective measures which correlate highly with semantic quality. The i.t.a. students used significantly more phrase modifiers. They also used significantly more words per composition.

Third Grade Handwriting

The results of the handwriting analysis showed no significant difference between the i.t.a. and T.O. groups. There was little reason to expect there would be, but these results tend to verify the assumptions of the design regarding the comparability of the i.t.a. and T.O. students.

Conclusions

It appears from the results that i.t.a. does not detract from scholastic skills. It does make a modest contribution to spelling skills, and to a slight but statistically significant degree to increased use of phrase

modifiers. It has no more effect on reducing differences in silent reading comprehension of students from different socio-economic levels than does T.O. as taught in the ten schools in this experiment.

APPENDIX A

Assignment and Replacement
of
Students, Teachers, and Principals

Assignment of Students

Prior to the start of school in the fall of 1967, the following memorandum, which prescribes the procedure for assigning the first wave of students to i.t.a. and T.O. classes, was sent by the director of research to the principals of the ten schools involved in the project. The same procedure was used to assign the second and third waves of students during the subsequent years of the project. "Experimental" classes were the i.t.a. classes and "control" classes were the T.O. classes.

To: Principals of i.t.a. experimental schools

From: Dr. George Ingebo

The lists of boys and girls in your kindergarten have been randomly divided. The lists at the top are pupils who will be placed in the "experimental class" according to the following directions:

1. Decide how many boys and how many girls are to be placed in the "experimental" room.
2. Start with the name below the red line and count down as many pupils as are needed. If there are not enough names in that list below the red line, go to the top of the list and continue counting.

You will use the same procedure in selecting the "control" class using the lists at the bottom of the page.

Students not placed in either the "experimental" or "control" classes will be placed elsewhere. If the student moves out of your district before classes begin in the fall, continue down the appropriate list to select a replacement.

Enclosed are two copies of your student list. Please return one copy to us indicating those students who will be placed in the "experimental" or "control" classes.

George S. Ingebo, Director
Educational Research and Testing
Portland Public Schools

Replacement of Students

For various reasons, there was some attrition of students from the i.t.a. and T.O. classes. The procedure for replacing students was prescribed by the following memorandum to principals:

To: Principals of i.t.a. experimental schools

From: Dr. George Ingebo

The following are procedures to use in placing "new" pupils and replacing pupils who leave:

1. Before School Begins:

- a. If a student moves out of your district before classes begin in the fall, continue down the appropriate list to select a replacement.
- b. If there are several "new" pupils to place, decide "experimental" or "control" by flip of a coin for each pupil. Place as many as are needed in the "experimental" or "control" classes by taking pupils in the order in which they first entered your school and place the remainder in the "overflow" class or classes.

2. After School Begins:

- a. If a student, or students, leave your district after school begins and no new students enroll, follow your regular program in balancing class load.
- b. If vacancies occur in both "experimental" and "control" classes at the same time, and if you have more than one "new" student enrolling simultaneously, decide "experimental" or "control" by flip of a coin. If a vacancy occurs in only one class at a time, and if only one "new" pupil enrolls, place "new" pupil on a first come basis.

The foregoing procedure was not precisely followed in all cases where students were replaced. Where it was important for the benefit of the child, such as placing twins in different rooms, deviations were made and recorded. Deviations from the original random assignment and replacement procedures were few, but the extent to which they could have introduced bias was investigated. Each spring teachers were interviewed regarding the level of ability and achievement of the few pupils not placed as assigned. As a result, the researchers were well satisfied that neither group had gained any advantage from these placements. The full extent of the departure from randomness is given in Tables 7, 8, and 9.

In two instances an additional first grade had to be formed; however, in the first case (Glencoe, Wave 1, Reason D) the students were selected out of the i.t.a. and T.O. classes on a random basis. In the second case (Richmond, Wave 3) students were arbitrarily taken out of the i.t.a. and T.O. classes by the principal. To determine whether this action left the i.t.a. class and the T.O. class unlike, an SRA Primary Mental Abilities test was administered to both classes. A t test of the difference between the means of the two classes was non-significant.

One other instance of non-conformity occurred when a principal made non-random assignments (Arleta, Wave 3). In this case also the Primary Mental Abilities test was administered and the difference in means was again non-significant.

Table 7

Cases of Sampling Non-Conformity
Wave 1 (1967-68 Grade 1)

School	Number Students in Experimental Class	Number Students in Control Class	Number Students in Overflow	Reason A	Reason B	Reason C	Reason D
Arleta	27	28	28	0	0	0	0
Atkinson	28	28	7	1	0	1	1
Duniway	24	25	23	0	0	1	1
Edwards	29	30	-	1	2	0	0
Glencoe	32	29	29	0	0	0	15
Grout	29	30	44	1	0	0	1
Hosford	31	31	29	1	2	0	1
Lane	27	28	54	1	0	0	2
Richmond	26	23	25	1	0	0	1
Woodstock	22	23	24	0	0	0	0

Reason A = Moved from Experimental to Control

Reason B = Moved from Control to Experimental

Reason C = Moved from Overflow to either Experimental or Control

Reason D = Moved from either Experimental or Control to Overflow

Table 8

Cases of Sampling Non-Conformity
Wave 2 (1968-69 Grade 1)

School	Number Students in Experimental Class	Number Students in Control Class	Number Students in Overflow	Reason A	Reason B	Reason C	Reason D
Arleta	24	26	44	0	0	0	0
Atkinson	24	23	25	0	0	0	1
Duniway	30	30	-	0	0	0	0
Edwards	31	32	-	1	0	0	0
Glencoe	32	31	30	0	0	0	0
Grout	28	24	37	0	0	0	0
Hosford	30	28	29	1	0	1	0
Lane	29	27	57	0	0	0	0
Richmond	30	31	30	1	1	0	1
Woodstock	28	25	15	0	0	0	0

Reason A = Moved from Experimental to Control

Reason B = Moved from Control to Experimental

Reason C = Moved from Overflow to either Experimental or Control

Reason D = Moved from either Experimental or Control to Overflow

Table 9

Cases of Sampling Non-Conformity
Wave 3 (1969-70 Grade 1)

School	Number Students in Experimental Class	Number Students in Control Class	Number Students in Overflow	Reason A	Reason b	Reason C	Reason D
* Arleta	25	24	49	1	2	1	3
Atkinson	25	24	23	0	0	0	0
Duniway	24	25	9	0	0	0	1
Edwards	22	24	-	0	1	0	0
Glencoe	27	30	25	0	0	0	0
Grout	26	27	28	1	0	0	2
Hosford	28	27	24	0	0	0	1
Lane	31	32	62	0	1	4	0
* Richmond	23	25	52	?	?	?	?
Woodstock	32	30	29	0	0	0	0

Reason A = Moved from Experimental to Control

Reason B = Moved from Control to Experimental

Reason C = Moved from Overflow to either Experimental or Control

Reason D = Moved from either Experimental or Control to Overflow

* Arleta and Richmond Experimental and Control Classes are being given pre-test (Primary Mental Abilities for ages 5 to 7)

Tenure of Principals

There was considerable turnover in principals during the six years of the experiment. However, only three of the ten schools had a new principal after the time the formal experiment started in 1967 until the third wave of the formal experiment had completed its first year, which was the spring of 1970. Other changes were made in school administration during the field study phase of the project as shown in Table 10.

Table 10

Principals Assigned to I.T.S. Schools

<u>School</u>	<u>1965-66</u>	<u>1966-67</u>	<u>1967-68</u>	<u>1968-69</u>	<u>1969-70</u>
Arleta	Miner Patton				John Cannon
Atkinson	Gertrude Ramage	Wallace Falkenstein			
Duniway	Lynn Johnson		Lloyd Rainwater		
Edwards	Bertha Little				LeRoy Moore
Glencoe	Marjorie Wilson	Melvin Wilson			
Grout	Vera Larson	Henry Mascall			
Hosford	Kenneth Means				
Lane	Melvin Wilson	Thomas Lydon	Edwin Petersen		
Richmond	Leonard Patterson				
Woodstock	Arthur Bauer				Ray O'Dell

APPENDIX B

Instructional Materials

The control (T.O.) classrooms used the Portland Reading Guide as an outline for T.O. materials. Each T.O. teacher selected from one of two basal series for basic reading instruction that each teacher would use for the duration of the study. T.O. teachers used the other series to build fluency and independence. Supplementary materials for literature and enrichment were supplied through the use of district literature packets and the use of Class II books. Reading workbooks for the basal readers are not used by the school district.

In grade 2 the experimental (i.t.a) classrooms continued using the i.t.a. Early to Read materials to pick up and continue those children who had not completed transition. Children who completed transition in Grade 1 were placed in Basic Goals in Redding-Webster Press, levels 2¹ - 3², and/or The American Series, levels 3¹ - 3², from the Class II list. The same literature and enrichment books were available to both i.t.a. and T.O. groups.

A survey of materials in T.O. classrooms during the field study year (Wave 0) revealed such wide variance of basic instructional material, the committee felt they should make specific recommendations for materials available from the order list. It was felt this would provide some balance between the i.t.a. and T.O. classrooms and more systematizing of T.O. classrooms. The following outline lists materials recommended by committee to meet the needs of each classroom. Budgetary limitations for this year delayed delivery of all materials. Partial orders came in May 1967 of the field study year preceding the experiment.

First Grade Materials Order List, 1966-67

- 5 Little owl sets
- 5 Pocket charts (easels)
- 3 Basic card sets: 2 Ginn, 1 Scott-Foresman
- 8 Sets of 22 Object boxes - consonants - Houghton-Mifflin
- 7 Picture and key cards - Houghton-Mifflin
- 4 Learning letter sounds filmstrips - Houghton-Mifflin
- 3 Building pre-reading skills, Kit A - Ginn

Second Grade Materials Order List

- | | | |
|----------------------------|---|---|
| 10 sets
of each
S.F. | { | The First Rolling Reader
The Second Rolling Reader
The Third Rolling Reader
The Rolling Phonics, Consonants
The Rolling Phonics, Vowels |
| 10 sets
of 3
each | { | My Pixie Dictionary
My Little Dictionary
My Second Dictionary |

Second grade i.t.a. classrooms were furnished with the same amount of Early to Read materials as Grade 1 with the exception of the forty Scholastic library books and additions of Workbook 8. This workbook is to review the irregular spelling patterns which occur during transition to T.O. Each teacher was given one copy for reference.

The supplementary materials which had been ordered to offset the new i.t.a. materials were delivered to (Grade 1 - Wave 1 and Grade 2 - Wave 0) classrooms. These were selected by members of the study committee from the regular language arts order list.

i.t.a. Order List, 1967-68 (per classroom unit)

(additional order for new class to be held at Lewis School)

Phase 1

- 10 Rides
- 10 Dinosaur Ben
- 10 Houses
- 10 Book 2
- 10 Book 3

Workbooks

30 Ready for Reading
30 Dinosaur Ben
30 Houses
30 Workbooks for Books 2 & 3

Teacher's Manual for Phase 1

Phase II

10 Book 4
10 Book 5

Workbooks

30 Workbooks for Book 4
30 Workbooks for Book 5

Teacher's Manual for Phase II

Phase III

10 Book 6
10 Book 7

Workbooks

30 Workbooks for Books 6 & 7

Teacher's Manual for Phase III

Instructional Materials

1 Handbook for Writing and Spelling
30 My Alphabet Books (pupil edition)
1 My Alphabet Books (teacher edition)
1 Sound-symbol cards
1 Vocabulary cards
1 Set 1
1 Set 11
1 Set 3
1 Set 4
1 Set 5

Instructional Materials
Library Sets

T.O. Order List, 1967-68

First Grade Materials

5 Pocket charts (easels)
3 Basic card sets: 2 Ginn, 1 Scott-Foresman
7 Picture and key cards - Houghton-Mifflin
3 Building pre-reading skills, Kit A - Ginn
8 Object boxes - consonants (22) - Houghton-Mifflin
5 Little owl sets - Holt
4 Learning letter sounds F.S. - Houghton-Mifflin

Second Grade Materials

10 The First Rolling Reader - Scott-Foresman
 10 The Second Rolling Reader - Scott-Foresman
 10 The Third Rolling Reader - Scott-Foresman
 10 The Rolling Phonics, Consonants - Scott-Foresman
 10 The Rolling Phonics, Vowels
 10 My Pixie Dictionary
 10 My Little Dictionary
 10 My Second Dictionary
 20 Workbook 8

Class II Reading Textbook List

Teachers may order up to 12 books of one or more titles for a twelve-week period. If more are needed, a note of explanation should be attached to the order. Class II books of any grade level may be ordered to suit the needs of your classroom. Orders for Class II books will be received after the beginning four weeks of the school year. Exception: RR books may be ordered in the spring. Starred books are inactive and will not be replaced.

<u>Title</u>	<u>Reading Level</u>	<u>Tchr. Ed.</u>	<u>Publisher</u>
Beyond Treasure Valley	3 ¹	TE	Am Bk
Along Friendly Roads	3 ²	TE	"
Sailor Jack and Homer Pots	PP	TE	Benefic
Sailor Jack and Eddy	PP	TE	"
Sailor Jack	PP	TE	"
Sailor Jack and Bluebell's Dive	P	TE	"
Sailor Jack and Bluebell	P	TE	"
Sailor Jack and the Jet Plane	P	TE	"
Sailor Jack and the Ball Game	1	TE	"
Sailor Jack's New Friend	1	TE	"
Sailor Jack and the Target Ship	2	TE	"
Sailor Jack Goes North	3	TE	"
Lost Uranium Mine	2	TE	"
Hunting Grizzly Bears	3	TE	"
Fire on the Mountain	3	TE	"
City Beneath the Sea	4	TE	"
Search for Piranha	4	TE	"
Sacred Well of Sacrifice	5	TE	"
*Don and Peggy	PP		B-Mer
*Come and See	PP		"
*Here We Play	PP		"
*Days of Fun	P		"
*Our Happy Ways	1		"
*Meet our Friends	2		"
Fun With Tom and Betty	RR	Man	Ginn
Games to Play	RR	Man	"
We Are Neighbors	2 ¹	TE	"
Around the Corner	2 ²	TE	"
Doorways to Discovery	7	TE	"
Windows of the World	8	TE	"

<u>Title</u>	<u>Reading Level</u>	<u>Tchr. Ed.</u>	<u>Publisher</u>
Jim Forest and Ranger Don	2		H-Wag
Jim Forest and the Bandits	2		"
Jim Forest and the Mystery Hunter	2		"
Jim Forest and the Dead Man's Peak	3		"
Jim Forest and the Flood	3		"
Jim Forest and the Lone Wolf Gulch	3		"
The Sea Hunt	2		"
Treasure Under the Sea	2		"
Submarine Rescue	3		"
The Pearl Divers	3		"
Frogmen in Action	4		"
Danger Below	4		"
Whale Hunt	4		"
Rocket Divers	5		"
The Mystery of Morgan Castle	2		"
The Mystery of the Marble Angel	3		"
The Mystery of the Midnight Visitor	3		"
The Mystery of the Missing Marlin	3		"
*Rain and Shine	P		Heath
*Something Different	1		"
*Lost and Found	2 ¹		"
*Fun and Frolic	3 ¹		"
*Luck and Pluck	4		"
*The Brave and Free	6		"
*Reading Roundup, Book I	7		"
*Reading Roundup, Book II	8		"
Tip	pp1		HoMif
Tip and Mitten	pp2		"
The Big Show	pp3		"
With Jack and Janet	1 ¹		"
*Up the Reading Road	PP		Laid
*On the Way to Storyland	P		"
*Making Storybook Friends	1		"
*Stories We Like	2		"
*Children Everywhere	3		"
*The World Around Us	5		"
*From Every Land	6		"
*Just for Fun	2 ²		L & C
*Once Upon a Storytime	3 ²		"
*Meeting New Friends	4		"
*Ranch Book	P		Macm
*Straight Up	1 ²		"
*Straight Down	2-3		"

<u>Title</u>	<u>Reading Level</u>	<u>Tchr. Ed.</u>	<u>Publisher</u>
Skip Along	PP		RP
Under the Sky	PP		"
Open the Door	PP		"
High on a Hill	PP		"
Day In and Day Out	P		"
The Wishing Well	P		"
Round About	1		"
Anything Can Happen	1		"
Down the River Road	2		"
Friendly Village	2 ¹		"
Neighbors on the Hill	2 ²		"
It Happened One Day	2		"
Through the Green Gate	3 ¹		"
If I Were Going	3 ²		"
Five-and-a-Half Club	3		"
It Must Be Magic	4		"
Singing Wheels	4		"
Engine Whistles	5		"
They Were Brave and Bold	5		"
Runaway Home	6		"
The Tales They Tell	6		"
Reading Literature, Book I	7		"
Sails Set for Treasureland	5		San
We Read Pictures	RR	TE	SF
We Read More Pictures	RR		"
We Three	1		"
*Boxcar Children	3		"
*Surprise Island	3		"
Parades	7		"
Distant Doorways	4		SBurd
Frontiers Old and New	5		"
On the Long Road	6		"
Basic Goals in Reading, Book 2 ¹	2 ¹		Web
Basic Goals in Reading, Book 2 ²	2 ²		"
Basic Goals in Reading, Book 3 ¹	3 ¹		"
Basic Goals in Reading, Book 3 ²	3 ²		"
*Friday, the Arapaho Indians	3		Whe
*Squanto and the Pilgrims	3		"
*Chief Black Hawk	4		"
*Pilot Jack Knight	4		"
*Cowboys and Cattle Trails	5		"
*At Play	P ¹		Win
*Fun in Story	P ²		"
*I Know a Secret	1 ¹		"
*Good Stories	1 ²		"
*Along the Way	2 ¹		"
*Story Road	2 ²		"
*Faraway Ports	3 ¹		"
*Enchanting Stories	3 ²		"

Materials - Use of S.R.A. Materials in i.t.a. Schools (1968-69)

Because 1969-70 was a state-wide language arts textbook adoption year, it was necessary to determine the future use of newly-adopted primary reading materials in the ten study schools. Investigation of the S.R.A. linguistic materials led to the conclusion that to use them would introduce a variable (another decoding approach) which would invalidate the study findings to date. The committee decision was to follow the original experiment design and a memorandum was written as follows:

To: Principals of i.t.a. Experiment Schools: Miner Patton, Wallace Falkenstein, Lloyd Rainwater, Bertha Little, Melvin Wilson, Henry Mascall, Kenneth Means, Edwin Petersen, Leonard Patterson, Arthur Bauer, Helen Unger, Clifford Williams, Marian Zollinger, Lillian Mosher, Richard McMenemy, Dr. Norman Hamilton, George Ingebo, Mr Jean Stave, and all 1st, 2nd, and 3rd teachers in i.t.a. experiment schools.

From: Leslie Lee

Date: May 28, 1969

On Friday, May 23, all administrators and supervisors concerned with the i.t.a. experiment met in the Area V office to discuss procedures and materials to be used for the remaining years of the experiment.

Since the experimental design has been followed with exceeding care to this point, the remaining period should be as carefully controlled to insure the generalizability of the experiment. For this reason it was the judgment of the entire group that the newly adopted SRA Basic Reading Series should not be introduced in either the control or overflow groups in grades 1 and 2.

The following procedures were agreed upon:

1. Schools in the i.t.a. experiment will continue with the present reading materials for all grade 1 classes (experimental, control, and overflow) during the 1969-70 school year -- and will not use SRA reading materials.
2. Grade 2 students during the 1969-70 and 1970-71 school years will continue with the materials they are now using until such time as they are ready to move into the reading materials as listed in the 1969 book list with the caution that no youngsters are to use the SRA reading materials. The decision as to what specific materials to use after i.t.a. transition is a matter of professional judgment.

3. When children in the experimental classes have completed the i.t.a. series and have made the transition to T.O., they can be given any grade 2 or grade 3 materials, other than SRA, for which they are ready if it is available in Class I or Class II as listed in the 1969 book list. In control and overflow classes, also, the children may use the reading materials other than SRA listed in Class I or II, as they become ready for them.
4. A timetable of the i.t.a. experiment is listed below which includes materials:

Wave 0 (Baseline)

1966-67 Grade 1
1967-68 Grade 2
1968-69 Grade 3

Wave 1 (First experimental wave)

1967-68 Grade 1
1968-69 Grade 2
1969-70 Grade 3

Wave 2 (Second experimental wave)

1968-69 Grade 1
1969-70 Grade 2 (new materials after transition--no SRA)
1970-71 Grade 3 (depending further i.t.a.)

Wave 3 (Third experimental wave)

1969-70 Grade 1 (present materials -- no SRA)
1970-71 Grade 2 (new materials after transition--no SRA)
1971-72 Grade 3 (depending further i.t.a.)

i.t.a. Order List, 1968-69 (per classroom unit)

PHASE I

Workbooks

32 Ready for Reading
32 Dinosaur Ben
32 Houses
32 Workbook for Books 2 & 3

PHASE II

Workbooks

32 Workbooks for Book 4
32 Workbooks for Book 5
1 Phase II Teacher's Manual

PHASE III

Workbooks

32 Workbooks for Books 6 & 7

320 copies of Workbook on Spelling in the Regular Alphabet

2 each i.t.a. classroom library sets - 40 to a set for 1st grade
(paperbacks and free i.t.a. wall charts with each set)

50 #9543 Workbooks for Books 2 & 3

20 #9553 Workbooks for Book 4

20 #9563 Workbooks for Book 5

50 #9573 Workbooks for Books 6 & 7

i.t.a. Order List, 1969-70 (per classroom unit)

PHASE I

Workbooks

32 Ready for Reading

32 Dinosaur Ben

32 Houses

32 Workbook for Books 2 & 3

PHASE II

Workbooks

32 Workbooks for Book 4

32 Workbooks for Book 5

PHASE III

Workbooks

32 Workbooks for Books 6 & 7

32 Workbook 8 (Spelling in the
Regular Alphabet)

THE i.t.a. ALPHABET

æ b c d œ
face bed cat dog key

f g h ie j k
feet leg hat fly jug key

l m n œ p r
letter man nest over pen girl

r s t uæ v w
red spoon tree use voice window

y z s wh ch
yes zebra daisy when chair

th th sh 3 r
three the shop television ring

a au a e i o
father ball cap egg milk box

u ω ω ou oi
up book spoon out oil

APPENDIX C

Teacher Training

Training Teachers in Reading Instruction

There were three phases in the i.t.a. project. The first phase was a pilot year involving one classroom. The second phase started the following year and it was a one-year field study which included ten schools with one i.t.a. and one T.O. classroom each. The third phase followed the one-year pilot study and constituted the formal experiment. The formal experiment involved three waves of students. Before school started each fall, the i.t.a. teachers received instruction in the use of the i.t.a. materials. Prior to the start of the field study phase and the formal experimental phase, the T.O. teachers received a comparable amount of instruction in teaching beginning reading.

The first training program was a one-week workshop held in June 1965 for four teachers in the pilot phase school. Three of the four teachers were backup for the fourth teacher, Mrs. Helen Kay Unger, who later served as reading consultant during the subsequent phases of the project.

Training for the field study phase consisted of two three-day workshops, one for i.t.a. and one for T.O. teachers. Sessions were held in August 1966 with the reading consultant as instructor for both workshops.

Training for the formal experimental phase, which started in the fall of 1967, consisted only of a two-day workshop for second grade teachers since the first grade teachers had received training the previous year in preparation for the field study phase. In the fall of 1968 only one new i.t.a. and three new T.O. teachers came into the project, so no workshop was held. Individual instruction was provided by the reading consultant in the form of a preliminary meeting with the new teachers in order to explain the program to them. These new teachers received extra classroom visits during the first few weeks of school.

The following year (fall 1969) two new first grade and eight new second grade teachers coming into the project (Table 11) made it necessary to conduct a one-day workshop before school opened. Extra consultant help was given as long as needed.

The reading consultant served the ten i.t.a. and ten T.O. classes on a full-time basis, starting with the field study phase which began in the fall of 1966. This gave her a year of practice consulting before the start of the formal experimental phase of the project. She continued as full-time reading consultant for the project through the spring of 1970, by which time the third wave of students had finished the first grade. Her last year on the project was 1970-71 and was on a part-time basis.

Reasons for teacher turnover were pregnancy or transfer, and not dissatisfaction with the project.

Table 11

Teacher Replacement in First and Second Grades

Wave 1, Grade 1

Arleta	-	T.O. class
Richmond	-	T.O. class

Wave 1, Grade 2

Hosford	-	i.t.a. class
Lane	-	T.O. class

Wave 2, Grade 1

Edwards	-	i.t.a. class
Hosford	-	i.t.a. class

Wave 2, Grade 2

Arleta	-	T.O. class
Glencoe	-	i.t.a. class
Edwards	-	i.t.a. class
Hosford	-	i.t.a. class
Hosford	-	T.O. class
Lane	-	i.t.a. class
Lane	-	T.O. class
Richmond	-	i.t.a. class

Wave 3, Grade 1

Atkinson	-	i.t.a. class
Edwards	-	i.t.a. class
Hosford	-	i.t.a. class

Wave 3, Grade 2

No information

APPENDIX D

Instructional Programs for
i.t.a. And T.O. Classes

Instruction (1967-71)

1. Because teachers in the i.t.a. classrooms had no previous experience with these materials, it was felt they needed a year to become familiar with the approach. The field study year also provided important design and nullified somewhat the "halo" effect.
2. Visitations were made on a regular basis to both i.t.a. and T.O. classrooms by the reading consultant.
3. Observations in classrooms were limited to thirty minutes. Observers were required to spend equal time in both i.t.a. and T.O. classrooms to provide balance.
4. Substitutes were provided in the usual manner from a central pool. Those who substituted in the same building gained some familiarity with i.t.a. and expressed desire to work in the i.t.a. classrooms.
5. The i.t.a. classrooms progressed through seven readers, corresponding workbooks, and library sets of The Early to Read series. These materials utilize language experiences with much auditory training and handwriting development as a structured and consistent approach to develop blending as the major word attack skill. As children progressed through the program they were introduced systematically to phonetic and structural skills necessary for reading T.O. After transition, children were provided with library and supplemental enrichment materials from the Language Arts list. All teachers followed the i.t.a. manual carefully to maintain uniformity.
6. The T.O. classrooms used the Portland Reading Guide as a basis for instruction. The Ginn and Scott-Foresman Basal Readers (no provision for workbooks) were used as parallel readers. In order to secure some degree of constancy, T.O. teachers were asked to select the series they preferred for basic instruction and skill development for the duration of the study. The other

series was to be used to build fluency and independence. Both series utilized controlled vocabulary with gradual introduction of phonetic and structural word attack skills through the whole word approach.

7. Approximately 99% of the children made a successful transition from i.t.a. to T.O. Not all of these children completed the Early to Read materials. Teachers found the readability indexes of Book 6 (3.0 - 4.2, M 3.5 reading levels) and Book 7 (2.0 - 3.9, M 2.9 reading levels) were too high for these children to read with fluency or comprehension. They were taught letter names, to recognize and associate upper case letters with lower case letters, and were given additional help recognizing words with irregular spelling. By placing them in books written on a Senior Primer and Primer level, they were able to make the transition with a minimum of difficulty. Many children were bringing T.O. books from home and the library before formal transition work began. They completed the program and exhibited no concern about reading i.t.a. and T.O. concurrently.
8. Spelling Transition - Children made the reading transition more quickly than the spelling transition. Teachers indicate there must be much systematic spelling instruction in Grade 2. Second grade teachers requested that each child in Wave 1 be provided with Workbook 8 - Introduction to Spelling in the Regular Alphabet. Budgetary provision was made and books were ordered for use with Waves 1, 2, and 3.
9. Reading Transition (1968-69) - Five boys from Atkinson did not complete the formal transition phase of the program. All moved slowly and did not comprehend the stories in Book 6. They learned letter names and to associate upper and lower case letters. They received extra help on irregular spelling patterns of words in primer level T.O. books.

10. Two meetings of the planning committee were scheduled in the spring of 1968 to determine whether S.R.A. reading materials would be used in any of the i.t.a. study schools. The decision was not to inject any new materials into the study.

APPENDIX E

Transition From i.t.a. to T.O.

Transition from i.t.a. to T.O.

Students who were in i.t.a. classes were expected to make the transition to T.O. well before the end of the second grade. Data are available for the first two waves and the results are shown in Tables 12 and 13. At the end of the first grade, 198 out of 431 (or 46%) had made the transition. At the end of the second grade, 411 out of 428 (or 96%) had made the transition.

Table 12

i.t.a. Experiment

(Percent of Second Grade Students Who Have Completed Transition - Wave 1)
(Grade 1 Students in 1967-68)

School	Number Comp. Trans. by End of Nov., 1968	Total i.t.a. end of Nov.	Percent Comp. Trans. by End of Nov., 1968	Number Comp. Trans. by End of Febr., 1969	Total i.t.a. end of Febr.	Percent Comp. Trans. by End of Febr., 1969	Number Comp. Trans. by End of June, 1969	Total i.t.a. end of June	Percent Comp. Trans. by End of June, 1969
Arlota	7	23	30.4	7	23	30.4	20	23	87.0
Atkinson	7	23	30.4	18	23	78.3	22	23	95.7
Duniway	13	19	68.4	19	19	100.0	19	19	100.0
Edwards	3	19	15.8	3	19	15.8	19	19	100.0
Glencoe	27	27	100.0	27	27	100.0	26	26	100.0
Grout	15	21	71.4	15	21	71.4	21	21	100.0
Hosford	10	23	43.5	15	23	43.5	23	23	100.0
Lane	7	16	43.8	7	15	46.7	13	14	92.9
Richmond	0	21	00.0	13	21	61.9	21	21	100.0
Woodstock	12	17	70.6	12	17	70.6	16	17	94.1
TOTALS	101	209	48.3	136	208	65.4	200	206	97.1

Table 13

i.t.a. Experiment

(Percent of Second Grade Students Who Have Completed Transition - Wave 2)
(Grade 1 Students in 1968-69)

School	Number Comp. Trans. by End of Nov., 1969	Total i.t.a. end of Nov.	Percent Comp. Trans. by End of Nov., 1969	Number Comp. Trans. by End of Febr., 1970	Total i.t.a. end of Febr.	Percent Comp. Trans. by End of Febr., 1970	Number Comp. Trans. by End of June, 1970	Total i.t.a. end of June	Percent Comp. Trans. by End of June, 1970
Arleta	8	19	42.1	12	19	63.2	19	19	100.0
Atkinson	6	18	33.3	18	18	100.0	18	18	100.0
Duniway	15	28	53.6	27	28	96.4	27	28	96.4
Edwards	4	19	21.1	8	19	42.1	16	19	84.2
Glencoe	27	27	100.0	27	27	100.0	27	27	100.0
Grout	16	22	72.7	21	22	95.5	21	22	95.5
Hosford	0	26	00.0	14	26	53.8	26	26	100.0
Lane	17	28	60.7	21	28	75.0	28	28	100.0
Richmond	0	17	00.0	9	17	52.9	17	17	100.0
Woodstock	4	18	22.2	12	18	66.7	12	18	66.7
TOTALS	97	222	43.7	169	222	76.1	211	222	95.0

APPENDIX F

Standardized Tests

Standardized Tests

Standardized reading tests were administered in the spring of the second grade and in the spring of the third grade. The second grade test was Form 12A Reading of the Cooperative Primary Tests. This test had been selected in competition with other tests for use in this and two other district programs which needed a reading test suitable for administration at the end of the second grade. The Cooperative Test gave the best distribution of scores of the tests tried. Its validity was checked by administering it to a selected population of pupils who were later tested individually by experienced remedial reading teachers. These teachers rank ordered the students' individual performance and those ranks were compared with rankings of their Cooperative Test scores. Rank order correlations thus obtained were judged satisfactory.

The standardized reading test used in the third grade was the primary level of the McMenemy Measure of Reading Ability. This test was specifically developed for use at the end of the third grade of the Portland Public Schools. Its emphasis is on the general ability to read silently and answer questions about the content of the reading selections.

Development of the test by the author in close cooperation with the Testing Section of the Research and Measurement Department over a three-year period included the following:

1. Extensive experimental testing of carefully randomized groups with multiple forms.
2. Item analyses on random samples of the Portland population.
3. Selection of items for increased range of test difficulty as well as discrimination.
4. Use of an answer sheet which had the multiple-choice alternatives printed on the sheet rather than in the test booklet.

5. Norms based on the performance of third grade Portland students converted to standard scores with a mean of 50 and a standard deviation of ten.

The standardized math test used in the third grade was the Portland Elementary School Mathematics Test, Primary. This test is a general achievement survey test for the latter half of grade 3. Part I, Computation, contains 36 items. Fifteen items are devoted to addition and subtraction of whole numbers, eleven to multiplication, and ten to division (two digit divided by one digit). Part II, Concepts, contains sixteen items on concepts of number, whole and fractional, and concepts of number operations, and measures. Part III, Using Numbers, requires the student to apply computation and meaning of operations to word problems. The test is scored by parts as well as total.

Development of the mathematics tests paralleled that of the reading test, making it especially valid for Portland students.

APPENDIX G

Third Grade Spelling

Third grade compositions (see Appendix H) supplied the data for comparison of spelling accuracy. A computer program was written for the research department to list alphabetically and tabulate all different word spellings in a group of compositions. The computer also listed the words in rank order of frequency of use, alphabetized within frequency. In each case of misspelling, the correct spelling was printed behind the misspelled word. Capitalization omitted or erroneously included was signified by computer symbols. The resulting lists were carefully gone over by a clerk to obtain word counts of each of the twenty most expected types of spelling errors. See Table 14 for chi square analyses of these spelling errors.

TABLE 14

Chi Square Analyses of Spelling Errors
Possibly Attributable to i.t.a. Instruction

€€	R	315	325	$\chi^2 = 0.0364$	$p < .80$
ee	W	21	23		
bee					
3	R	15	10	$\chi^2 = .0820$	$p < .70$
Z/S	W	14	11		
is					
€€	R	454	396	$\chi^2 = 2.5028$	$p < .15$
ea	W	81	92		
each					
c	R	1062	754	$\chi^2 = 2.2123$	$p < .15$
hard "c"	W	89	48		
cat					
ω	R	436	514	$\chi^2 = 2.4116$	$p < .15$
oo	W	88	80		
book					
œ	R	64	45	$\chi^2 = .0009$	$p < .98$
oe	W	13	9		
hoe					
œ	R	35	39	$\chi^2 = .2082$	$p < .60$
oa	W	7	10		
boat					
ou	R	345	282	$\chi^2 = 10.9677$	$p < .01$
ow	W	72	104		
how					

Table 14
(cont.)

ʃh	R	521	396	$\chi^2 = .8342$	$p < .40$
sh	W	14	15		
she					
ɔh	R	375	283	$\chi^2 = .7299$	$p < .40$
ch	W	27	26		
church					
wh	R	359	349	$\chi^2 = 7.5320$	$p < .01$
wh	W	80	45		
what					
ʈh	R	3274	2894	$\chi^2 = .1211$	$p < .80$
th	W	16	16		
thank					
kw	R	17	16	$\chi^2 = .2530$	$p < .70$
qu	W	2	1		
queen					
ks	R	74	79	$\chi^2 = 1.4788$	$p < .30$
x	W	12	7		
fox					
æ	R	282	282	$\chi^2 = 5.1682$	$p < .05$
ai	W	72	45		
pain					
æ	R	331	376	$\chi^2 = .7684$	$p < .40$
ay	W	51	48		
day					
ie	R	1737	1845	$\chi^2 = 1.8542$	$p < .20$
long "i"	W	36	27		
kind					

Table 14
(cont.)

ie
igh
fight

R	99		77
W	37		14

$$\chi^2 = 4.3736$$

$$p < .05$$

ue
u
music

R	156		49
W	63		25

$$\chi^2 = .6623$$

$$p < .50$$

ou
ou
out

R	855		804
W	147		115

$$\chi^2 = 1.8934$$

$$p < .20$$

APPENDIX H

Third Grade Compositions

The third grade spring writing exercises were independent activities with free choice of topic and previous knowledge of the assignment. The directions for administration are quoted below, followed by the rationale for rating procedures used.

To:

From: Mar Jean Stave
Educational Research & Testing

Date: April 15, 1968

Re: Grade 3 Composition Writing Exercise. One
sample to be taken during week of April 29.

Enclosed are the following materials to be used in administering the Grade 3 Composition Writing Exercise to be collected during the week of April 29 as was discussed in the meeting of i.t.a. principals on January 24:

Letter to participating teachers with instructions

Return envelopes (1 teacher)

Standard rule 8½ X 11 examination paper

#2½ pencils

1 large return envelope to be used by secretary to return all materials from your school including unused exam paper and the pencils. Materials should be returned not later than May 10.

PORTLAND PUBLIC SCHOOLS
631 Northeast Clackamas Street
Portland, Oregon 97208

April 15, 1968

INSTRUCTIONS FOR COMPOSITION WRITING

Grade 3

Dear Participating Teachers:

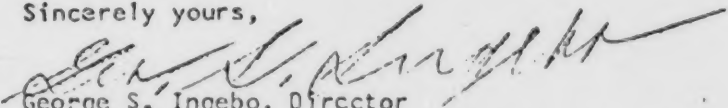
As a part of the i/t/a Experiment, your principal has asked you to obtain a sample of each pupil's composition writing during the week of April 29.

The following points are given to assist you:

1. Ask your pupils to write no more than one page on any subject that interests them. This should be their independent writing.
2. Select the writing period any time during the day when the pupils will be uninterrupted.
3. Tell the pupils a day or two ahead of time that you will ask them to write a short composition on a subject they like. They may be thinking about it.
4. Do not tell them that their written work will be given special attention. Such information might tend to restrict their normal work.
5. Allow them to write a first draft and copy it if they wish, but all work should be done in class. Do not mark or correct their papers. There should be no teacher correction on first draft.
6. Have pupils write final draft on the standard rule examination paper with the #2½ pencils enclosed.
7. The child's first and last name should be written on the back of the paper in the upper right corner (written by teacher).
8. Please have your absentees write their composition as soon as possible.
9. All materials should be returned by your secretary not later than May 10, in the enclosed envelopes.

If you have questions, please do not hesitate to call Mar Jean Stave, 234-3392, extension 349.

Sincerely yours,


George S. Ingebo, Director
Educational Research and Testing

GI:mm
Enclosure

From: Lillian Mosher and Marian Zollinger

Report to Dr. Ingebo

Re: Procedures used in rating the semantic
quality of 3rd grade written compositions
Research Project ICE

Inasmuch as the compositions had already been marked for certain technical skills, we understood that our assignment was to evaluate the semantic quality of the writing and, as a preliminary, to determine a method for this evaluation.

We considered grading the compositions on a five- or seven-point scale, from superior to illiterate, but discarded this plan as too subjective and inaccurate. While an objective scoring seemed more satisfactory, it presented weaknesses also—primarily that some important elements in writing had to be disregarded. Nevertheless, we selected two criteria which seemed indicative of semantic quality. They are:

I. ENRICHMENT OF IDEAS IN BASIC SENTENCE PATTERNS

Indicated by the number of word modifiers (W M),
phrase modifiers (P M), and clause modifiers (C M).

II. FLUENCY

Indicated by the number of words in the composition.

The count of modifiers for enrichment was expected to indicate two semantic qualities: (1) specificity in writing through descriptive elements dealing with such matters as kind, time, place, and manner; and (2) relationship of ideas, through sentence segments subordinate to the independent or basic elements of the sentences. The count of words for fluency was expected to indicate the quantity of ideas presented and the freedom with which they were expressed. We note that neither of these counts could be totally reliable in evaluating every

composition, but in general they appeared to indicate levels of semantic quality.

Samples of two complete compositions, quoted below, represent the wide variation in 3rd grade writing quality.

- (1) "I like to play football and baseball." (Spelling corrected)
Group 1, p. 43
- (2) "Grunt Puny is a very mean dog. When people walk by he growls. The people do not get scared because he is chained up. He has a line where people do not go by or he can bite them. Then one day he erased the line and put it back farther. Then a man went up to the line and Grunt Puny bit him. The man had to go to the hospital and see if he had rabies. Grunt Puny had rabies and the man got sick. The dog was going to be killed but he ran away to The Dalles. He ran away for 5 years. Then he came back to Oregon. Some people saw him and started to run after him. He ran with all his might and got away. They put out a search party for him. But they did not find him. The search parties are named Carol Sue Camilla Jennie Lisa Pam A. Pam N. Alison Jule. The boys names were Mike Doug Chris Pat Jim Jerry Mark W. Ronald and Jeff. They found him and they said do not kill him. They did not kill him because they got down on hands and knees and pleaded. Then the dog got a shot and he did not have rabies. Then he lived happily ever after."
(Spelling corrected) Group 1, p. 99

The following explanation of inclusions and exclusions in counting modifiers will serve as a definition of terms.

Word Modifiers

Included: Adjectives that modify nouns (tall girls)

Adverbs that modify verbs (leave quickly)

Nouns that modify nouns (math problems)

Adjectives and adverbs in sentence patterns
#1, #2, and #6 (see p. 4 of this report)

Excluded: Adverbs used as intensifiers (very, quite, only, rather, awfully, too)

Adjectives that are part of proper names (Grand Canyon)

Determiners modifying nouns (a, an, the, some, other, one, no, your, each, every)

Excluded (continued)

Adverbs or prepositions used in combination with the verb (clean up the city, eat up the ice cream, try out)

Adverb "then" when used to introduce independent clauses

Phrase Modifiers

Included: Prepositional phrases (in the kitchen)

Verbal phrases (a cat named Fury)

Modifying cluster (every once in a while, once upon a time)

Excluded: Verbals that are part of a series of verbs (we got going; We are going to try to find Jack)

Clause Modifiers

Included: Adjective and adverbial clauses (The boy we saw was Ralph; He was the one who scared us; When Judy was 10, she broke her arm; We ran where he couldn't find us.)

Excluded: "S" and "And so" clauses that substitute for "and" introducing independent clauses (So we went to the park; And so we had fun.) But "so" clauses that obviously showed a resulting relationship were counted.

In this evaluation, the term "sentence" is used to include all the words that would be included in counting a communication unit in English. In this way we sought to avoid penalizing the writer for the technical inability to place periods where they belong. In some cases writers using mature expression seemed to be reaching out beyond their technical skills. Since our assigned purpose was to evaluate the semantic quality of writing, we thought it important to separate meaning from the technical skill of punctuation. Walter Loban¹ used the communication unit in his research study of children's spoken language. As partial justification of his method of analysis, he quotes A. F. Watts², who used the term "natural linguistic unit" in his study:

¹Loban. THE LANGUAGE OF ELEMENTARY SCHOOL CHILDREN, National Council of Teachers of English, 1963, p. 6

²Watts. THE LANGUAGE AND MENTAL DEVELOPMENT OF CHILDREN, D. C. Heath, 1948, pp. 65-66

"The communication unit has been defined by Watts as a group of words which cannot be further divided without the loss of their essential meaning. For instance, "I know a boy with red hair" is a unit of communication. If "with red hair" is omitted, the essential meaning of that particular unit of communication has been changed . . ."

In other words, the communication unit includes the independent clause plus its subordinate elements. With this understanding, we read the following communication unit as one sentence, disregarding the period after "boys" and counting the remaining part a clause that modifies the preceding independent clause:

"Once upon a time there were three boys. Who ran away from home." Group 1, p. 175

The "basic sentence patterns" we looked for were adapted from those listed by Paul Roberts ³:

- | | |
|-------------------|--|
| (1) N V (Adv) | The boys ran (fast). (adverb optional) |
| (2) N V Adj | The sand was wet.
Grandma seemed cross. |
| (3) N LV N | A beetle is an insect. (linking verb) |
| (4) N V N | The clown caught the balls. |
| (5) N V N N | Dad gave us skis. (indirect object) |
| (6) N V N N (adj) | We called our dog a hero. (objective complement)
My math class makes me smart. (objective complement) |

Although the adjectives and adverbs in Patterns 1, 2, and 6 are part of the basic sentence patterns, we counted them because in each case they modify the meaning of the subject or predicate and thus add to the enrichment of the sentence.

Some of the important elements in writing which we found necessary to omit in the scoring are listed below:

Choice of words (unusual, vigorous verbs; specific rather than general words, e.g. cuddly bear)

³Roberts. ENGLISH SENTENCES, Harcourt, Brace & World, 1962

Diversity in vocabulary (wide range of vocabulary; avoidance of monotonous repetition). Many of the samples were too brief to make such a count meaningful.

Organization of ideas (transitional words, such as "since," "however," "yet"; obvious development of ideas, proportion, and completeness; statement of time and place; clarity of content). The count of modifiers indicated organization within sentences in some degree but not within the paragraph.

By the method used, individual papers in some cases received a high count of modifying words or phrases due to needless repetition. The scores in these cases were misleading. Taken as a whole, however, the results obtained by scoring Enrichment Factors and Fluency seemed to provide an indication of semantic maturity in writing.

APPENDIX I

Analysis of Word, Phrase, and Clause Modifiers

Table 15

Counts and Totals of Word, Phrase, and Clause Modifiers
for Three Waves of Students in
I.t.a. and T.O. Classes in Ten Schools

		Wave 1				Wave 2				Wave 3				N	WM	PM	CM
		N	WM	PM	CM	N	WM	PM	CM	N	WM	PM	CM				
Arleta	i.t.a.	13	32	56	18	11	39	46	13	8	15	34	6	32	86	136	37
	T.O.	14	56	50	10	13	47	48	11	11	28	45	9	38	131	143	30
Atkinson	i.t.a.	21	113	156	28	13	83	62	13	16	58	71	14	50	254	289	55
	T.O.	14	69	63	11	13	63	53	13	18	74	83	14	45	206	199	38
Duniway	i.t.a.	18	129	142	37	19	144	113	30	13	68	109	24	50	341	364	91
	T.O.	17	91	106	24	17	88	104	17	14	86	89	20	48	265	299	61
Edwards	i.t.a.	16	90	73	20	13	61	70	17	4	21	23	3	33	172	166	40
	T.O.	7	23	28	4	12	91	85	22	9	75	63	13	28	189	176	39
Glencoe	i.t.a.	18	127	123	31	14	55	40	7	13	67	101	15	45	249	264	53
	T.O.	19	115	129	42	17	85	66	8	10	55	46	16	46	255	241	66
Grout	i.t.a.	12	61	114	24	18	100	110	27	11	83	60	15	41	244	284	66
	T.O.	9	40	53	19	8	19	56	10	13	87	72	19	30	146	181	48
Hosford	i.t.a.	15	99	97	31	17	62	44	7	15	53	45	15	47	214	186	53
	T.O.	19	71	73	22	15	59	45	6	15	92	80	27	49	222	198	55
Lane	i.t.a.	10	35	30	17	15	51	48	7	14	106	75	16	39	192	153	40
	T.O.	14	44	32	13	13	64	39	10	13	69	48	11	40	177	119	34
Richmond	i.t.a.	11	36	66	16	12	26	38	7	10	56	58	8	33	118	162	31
	T.O.	10	36	56	10	12	35	37	7	8	33	24	10	30	104	117	27
Woodstock	i.t.a.	8	61	74	21	10	29	44	4	9	88	63	14	27	178	181	39
	T.O.	8	57	49	19	8	30	57	3	8	46	47	13	24	133	153	35
TOTALS	i.t.a.	142	783	931	243	142	650	615	132	113	615	639	130	397	2048	2185	505
	T.O.	131	602	639	174	128	581	590	107	119	645	597	152	378	1828	1826	433

APPENDIX J

Third Grade Handwriting

Third Grade Handwriting

Third grade handwriting samples were obtained from each student on four occasions during the spring from the three waves of students in the ten i.t.a. and ten T.O. classes (see attached memorandum dated January 16, 1969).

Zaner-Bloser publishes scales with handwriting samples which are intended to provide a standard for the teacher against which she can compare her students' handwriting. The third grade cursive evaluation scale has five levels ranging from poor to high. The Zaner-Bloser evaluation scale was used to rate the handwriting samples, but it proved to be unsatisfactory in two basic respects. First, it was found that approximately half of our samples were not as well written as the poorest sample on the rating scale. A scale was therefore developed with a range of 0 to 7. A rating of 2 on this scale is comparable to the lowest Zaner-Bloser rating, and a rating of six is comparable to the highest Zaner-Bloser rating. Figure 1 shows this transformation of scale:

Figure 1

Zaner-Bloser			Poor	Fair	Medium	Good	High	
PPS Scale	0	1	2	3	4	5	6	7

The second basic respect in which the Zaner-Bloser scale was unsatisfactory was that it did not provide a strong enough anchor for a single rater. In setting up the rating procedure, high agreement among two research staff members and the rater quickly established that it was a simple task to place in rank order a set of handwriting samples. However, it was not established until well into the rating task that the rating of the overall goodness (level) of a classroom sample was not stable. Classroom samples which were re-rated a week later reflected that the rater had shifted her baseline even though the Zaner-Bloser scale was always in view for comparison.

In its literature the company states the following: "In Books 3 through 8, cursive writing is stressed, with emphasis on letter formation, beginning, ending, and connecting strokes, slant, spacing, size reduction, increase in speed, and the development of legibility, rhythm, and fluency." It would be a straight-forward but time-consuming task to evaluate each sample of handwriting on each of these eleven characteristics. However, that procedure would not take into direct account the main criterion against which handwriting is compared by both teachers and lay persons, and that is the global impression or gestalt that a sample of handwriting provides. It is true that a sample of third grade handwriting rated high under the Zaner-Bloser method rates high on each of the eleven characteristics, and it is also true that a sample we rated zero or very poor rates low on these characteristics. Comparability of results between discrete and global evaluation tends to break down when a handwriting sample is above average on all but one or two of the eleven characteristics. The poor execution of one or two characteristics can be sufficiently conspicuous that the overall effect is discordant and on the basis of global impression, the sample would be rated low.

Our procedure of relying on global impression showed that in the case of our one experienced rater, the baseline is not stable. This finding is in keeping with psychological experiments on adaptation level and with informal observations of the results of grading or rating of complex human performance. In the case of adaptation level, a series of good samples tends to raise the baseline so that a subsequent poorer paper is rated lower than would be the case if the preceding series had been poor papers. It is more difficult to account for the day-to-day shifting in a rater's baseline. What is clearly lacking is an adequate anchor.

Initially all four sets of samples for Wave 1 were rated, then for Wave 2, and finally for Wave 3. The rater had no knowledge as to which samples were from i.t.a. students and which were from T.O. students. This procedure was followed to establish the degree of consistency of ratings for individual students across the four testing occasions, without regard to whether the student or the rater was contributing most to the degree of consistency. Each rating was made independently of previous ratings. It was readily apparent from the results that good ratings were consistent across the four occasions, as were poor ratings. To obtain a single rating for each student, the mode or median of his series of up to four ratings was recorded.

When it was discovered that a re-rating of several classroom samples revealed an upward shift in the level or mean of the ratings for some of these classrooms, the obtained mean differences between the three waves became suspect. A new rating procedure was developed which eliminated the effect of a shifting baseline. For each of the ten schools, the fourth sample for the three waves was mixed by an assistant, and the rater re-rated the samples. The fourth sample was selected because it showed the highest correspondence to the modal or median rating. The overall result of this procedure produced very similar means for the three waves -- 1.83, 1.79, and 1.65. The conclusion was that there was no difference in the quality of handwriting for the three waves.

PORTLAND PUBLIC SCHOOLS
631 Northeast Clackamas Street
Portland, Oregon 97208

To: Principals of i.t.a. Experiment Schools

From: Mar Jean Stave, Educational Research

Date: January 16, 1969

In the meeting held Tuesday, January 14, we discussed the upcoming special tests in connection with our i.t.a. experiment to be scheduled this year at the following times:

1. Grade 3 Handwriting -- to be given to all grade 3 students in your school two different weeks, two samples each week.

Test 1 -- schedule during week of February 24

Instructions to the teacher, paper, pencils, and marked envelopes for returning will be sent to your teachers the week of February 10. Please have your secretary return envelopes for all your grade 3 sections in one bundle by March 7.

Test 2 -- schedule during week of March 24

Materials will be sent to your teachers the week of March 10 to be returned not later than April 4.

2. Grade 3 Composition -- to be given to all grade 3 students in your school.

schedule test during week of April 21

Materials will be sent to your teachers the week of April 7 and should be returned not later than May 2.

3. Grade 2 ETS Reading -- to be given to all grade 2 students in your school.

schedule test during week of May 12

Materials will be sent to your school the week of April 28 and should be returned not later than May 23.

ALL MATERIALS ARE TO BE RETURNED TO MR. LEE'S OFFICE.

Please see that your secretary receives one copy of this schedule so she will know when materials will arrive at your school and due dates for returning materials to Mr. Lee's office.